DEPARTMENT
OF ENERGY

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PHILIPPINE ENERGY PLAN

2012-2030

Presentation Outline

1. Current Energy Situation
2. Policy Thrusts
3. Energy Supply and Demand Outlook
4. Sectoral Targets / Plans and Programs

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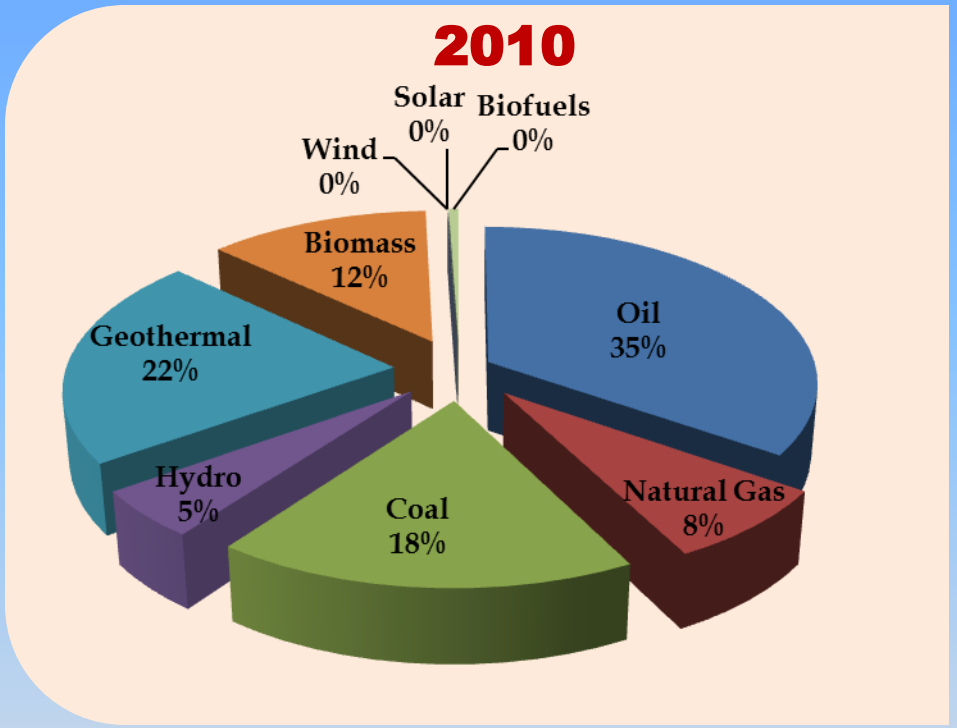
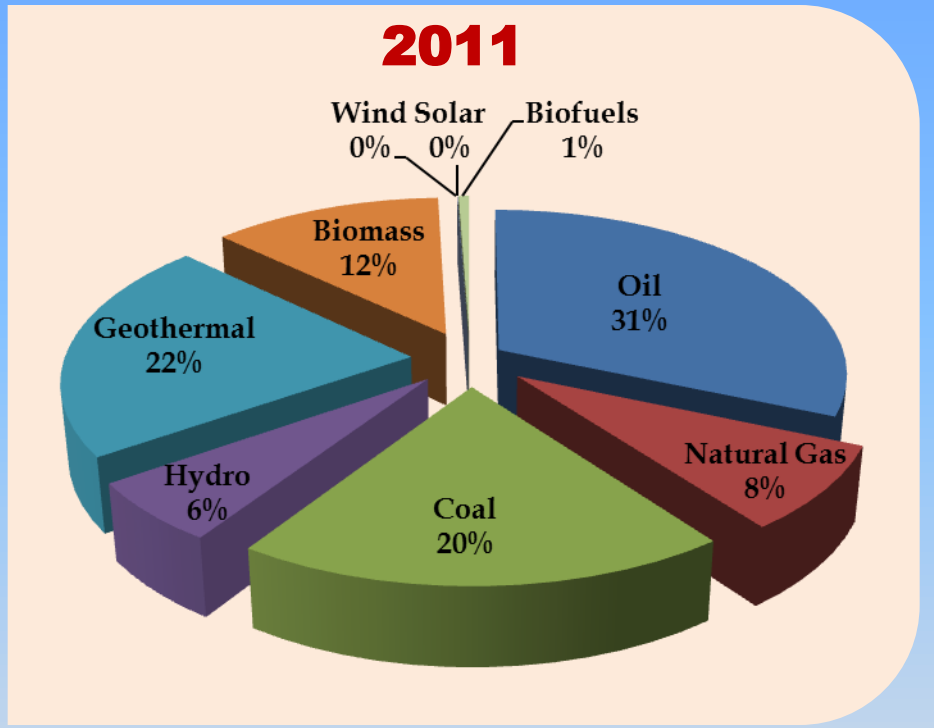
Current Energy Situation

Primary Energy Mix





	2010	2011
Total Energy (MTOE)	**39.29**	**39.40**
Self-sufficiency	**58.5**	**60.0**
Shares (%)		
Renewable Energy (RE)	*39.8*	*40.7*
Green Energy (RE + Natural Gas)	*47.8*	*48.7*

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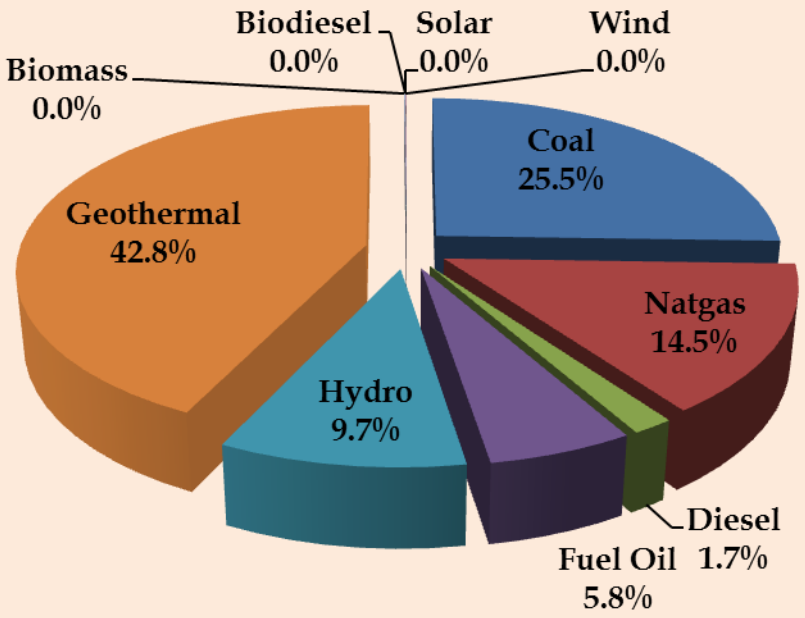
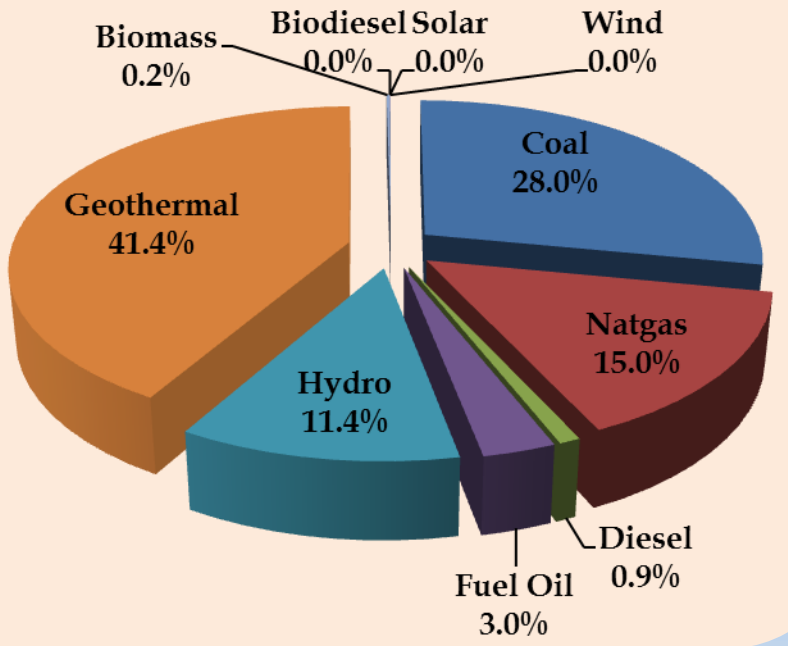
Current Energy Situation

Fuel Input Mix for Power Generation

2010



2011



	2010	2011
Total Energy (MTOE)	**19.97**	**20.63**
Self-sufficiency	**67.12**	**68.11**
Shares (%)		
Renewable Energy (RE)	*52.61*	*53.07*
Green Energy (RE + Natural Gas)	*67.12*	*68.11*

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Current Energy Situation

(As of 31 December 2011)

- Household Electrification Level – 70.18%
- Sitio Electrification Level – 70.15%
- No. of Service Contracts (SCs)
  - Oil and Gas - 27
  - Coal - 52
  - Awarded Renewable Energy (RE) – 46
- Energy Savings – PhP 220 Billion

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Policy Thrusts

- Ensure Energy Security
  - Expand use of renewable energy
  - Accelerate exploration of petroleum and coal
- Expand Energy Access
- Promote Low-Carbon Future
  - Make energy efficiency a way of life for Filipinos
  - Promote use of clean alternative fuels and technologies
- Climate proof the energy sector
- Develop Regional Energy Plans
- Promote Investment in the Energy Sector
- Identify and implement energy sector reforms

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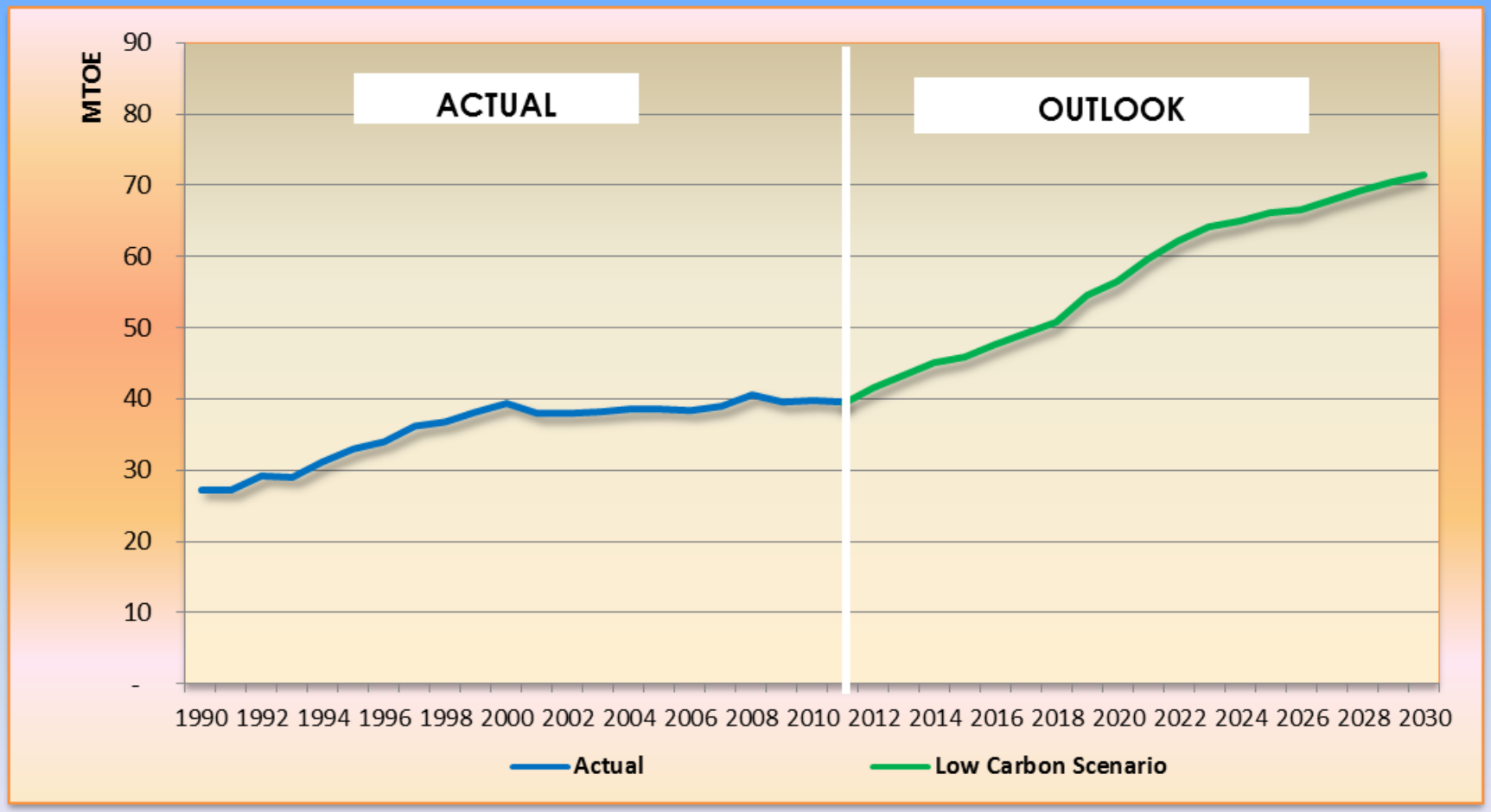
ENERGY SUPPLY AND DEMAND OUTLOOK

Total Primary Energy
Actual vs. Low Carbon Scenario (LCS)



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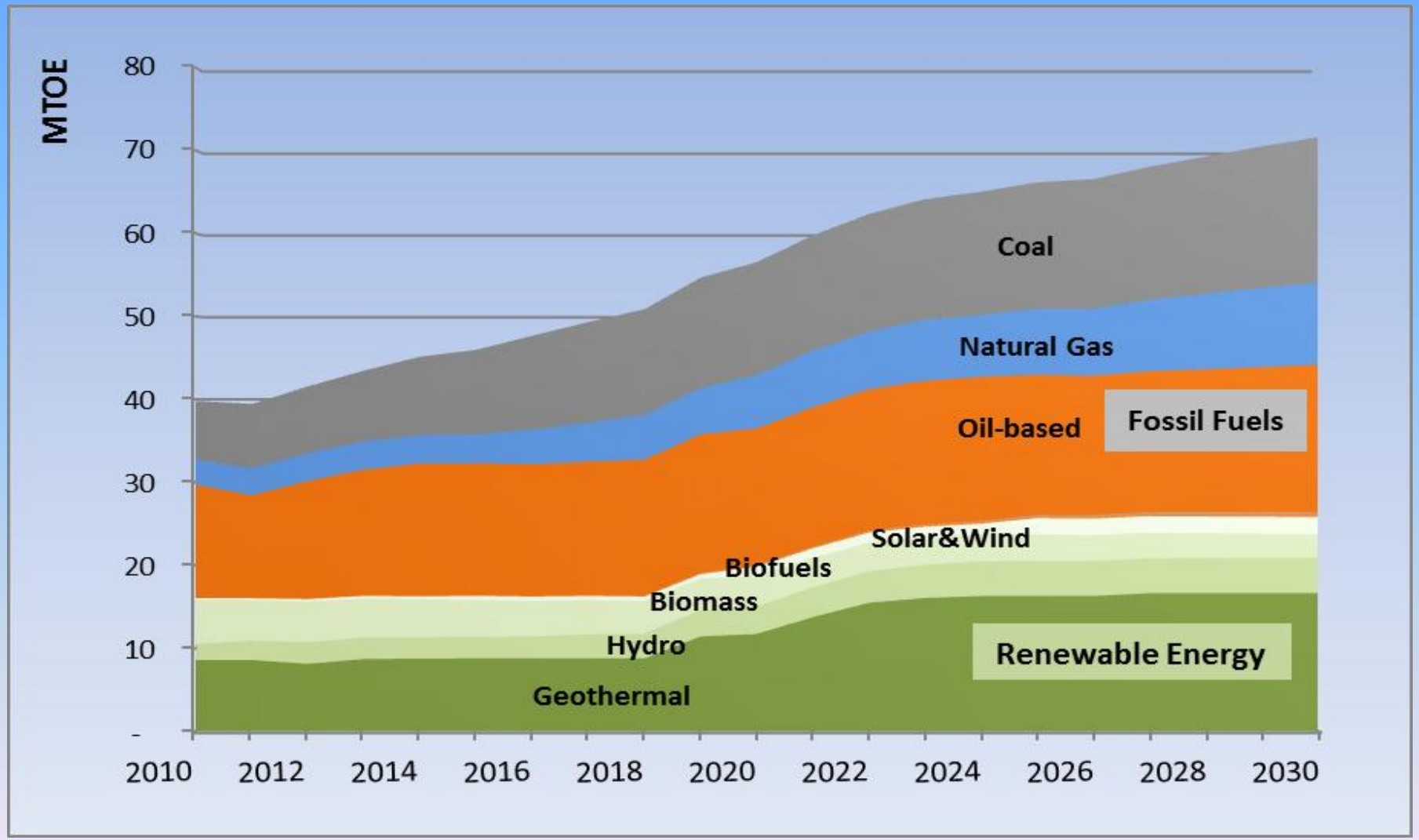
Total Primary Energy, by Fuel



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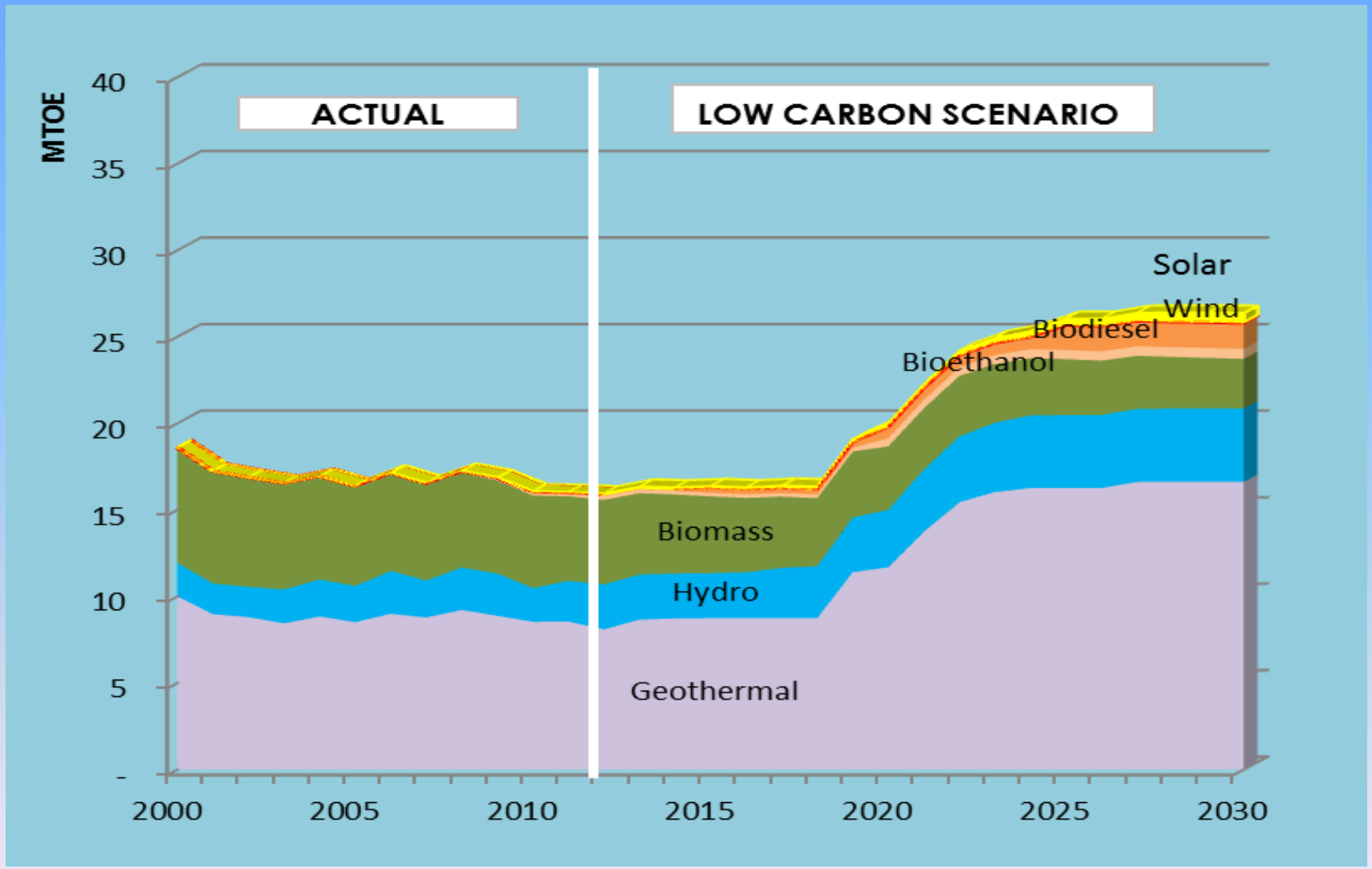
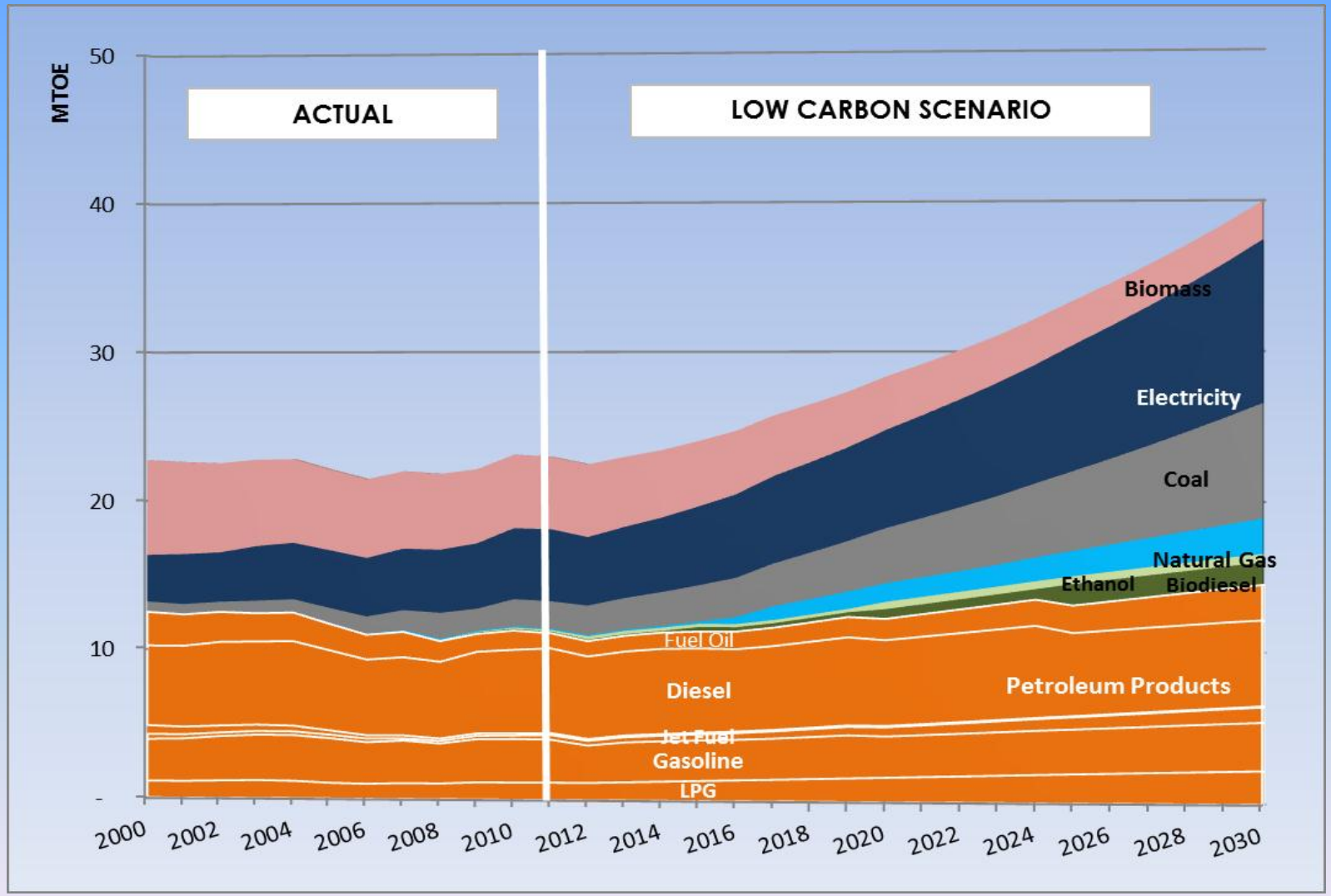
Total Renewable Energy



Total Final Energy Consumption, by Fuel



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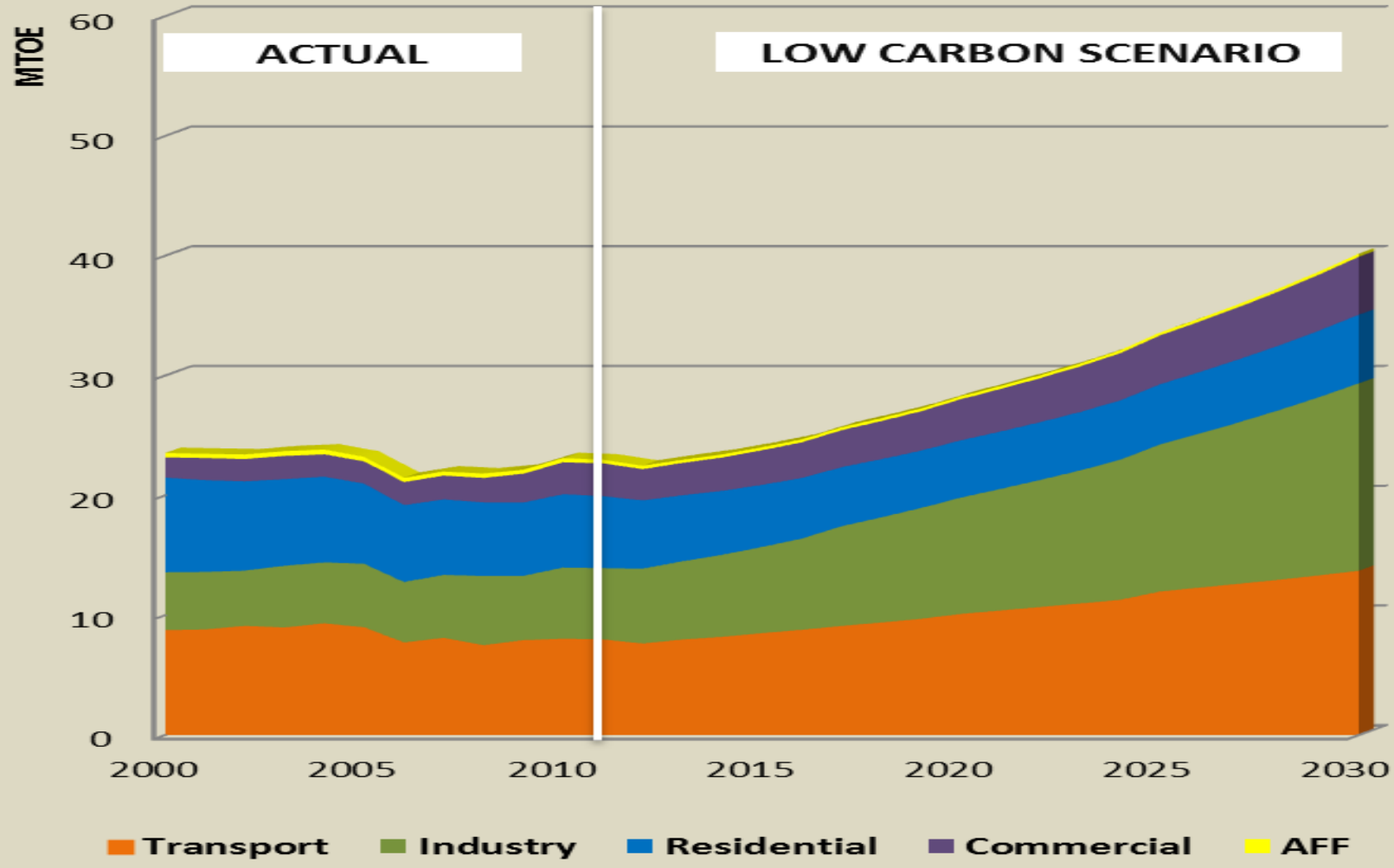
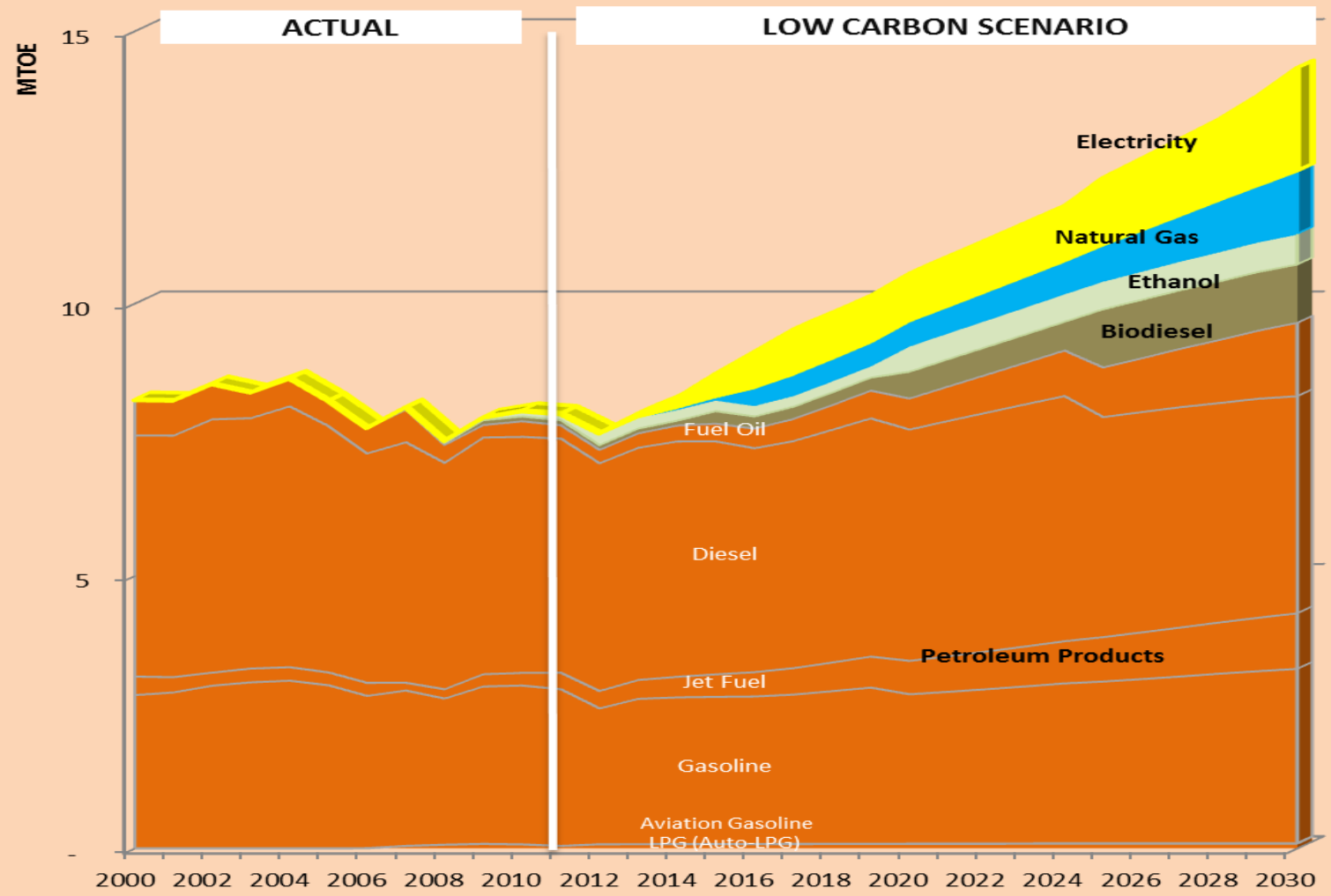
Total Final Energy Consumption, by Sector



Transport Energy Demand, by Fuel



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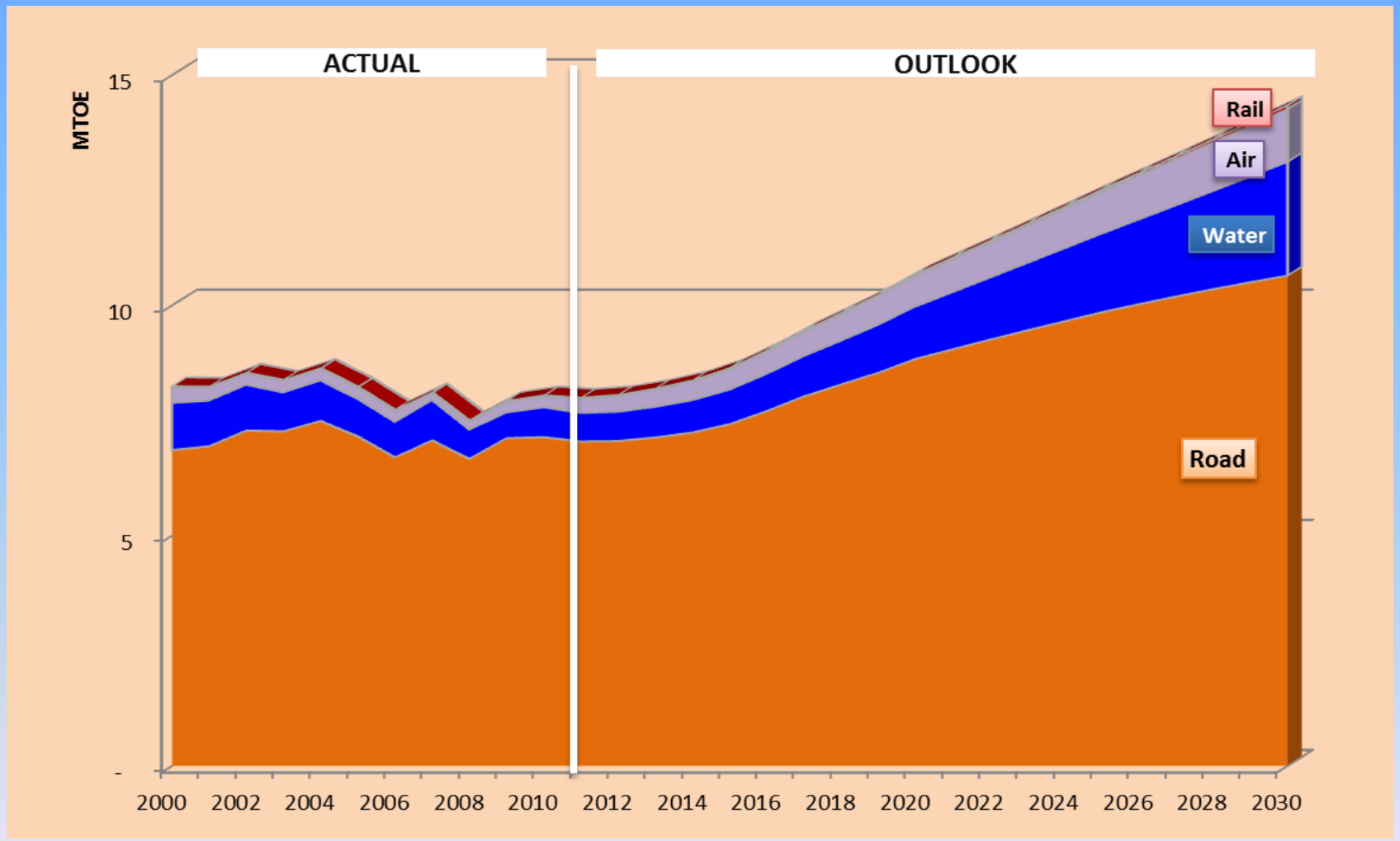
Transport Energy Demand, by Subsector Total



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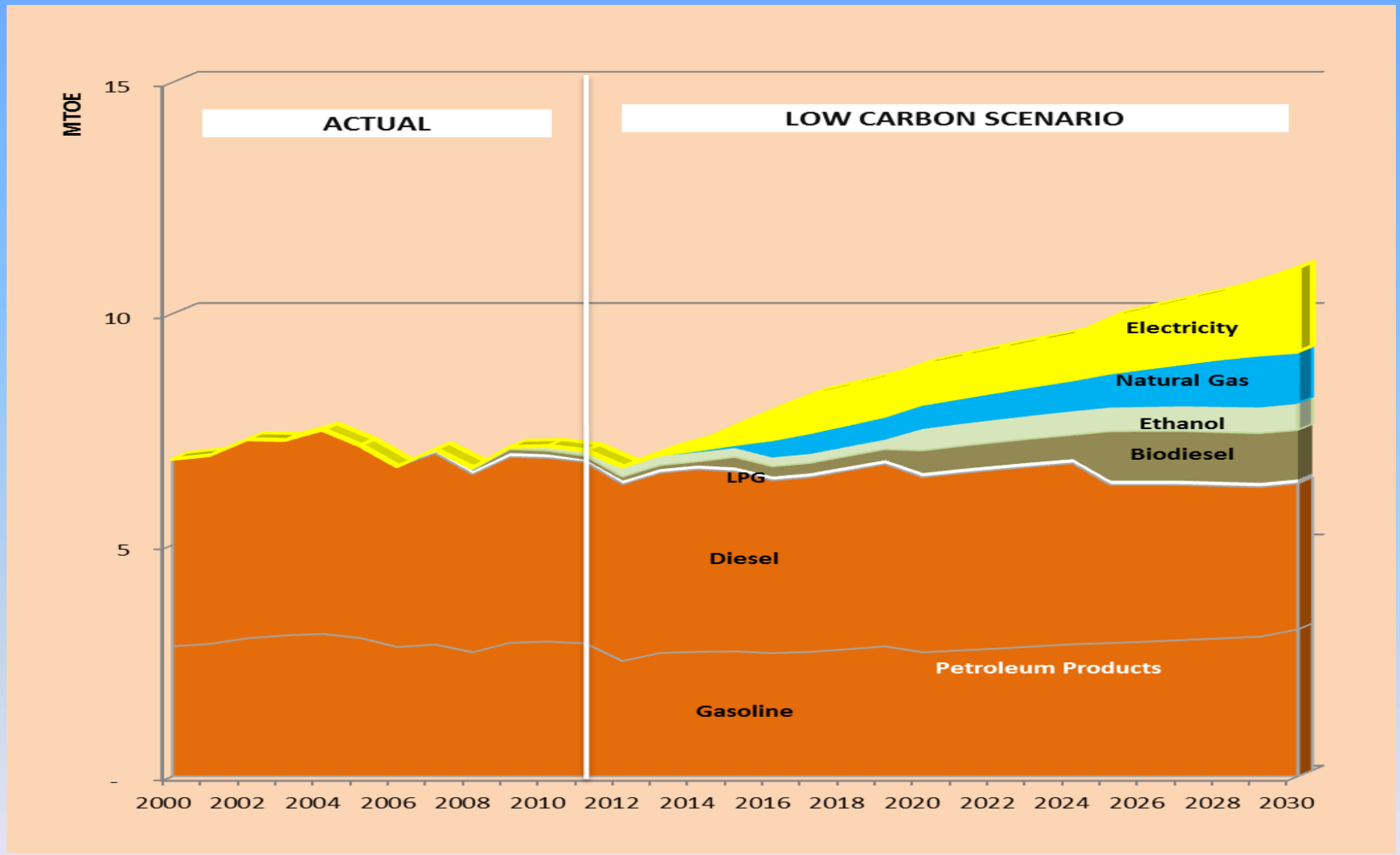
Land Transport Energy Demand, by Fuel Type



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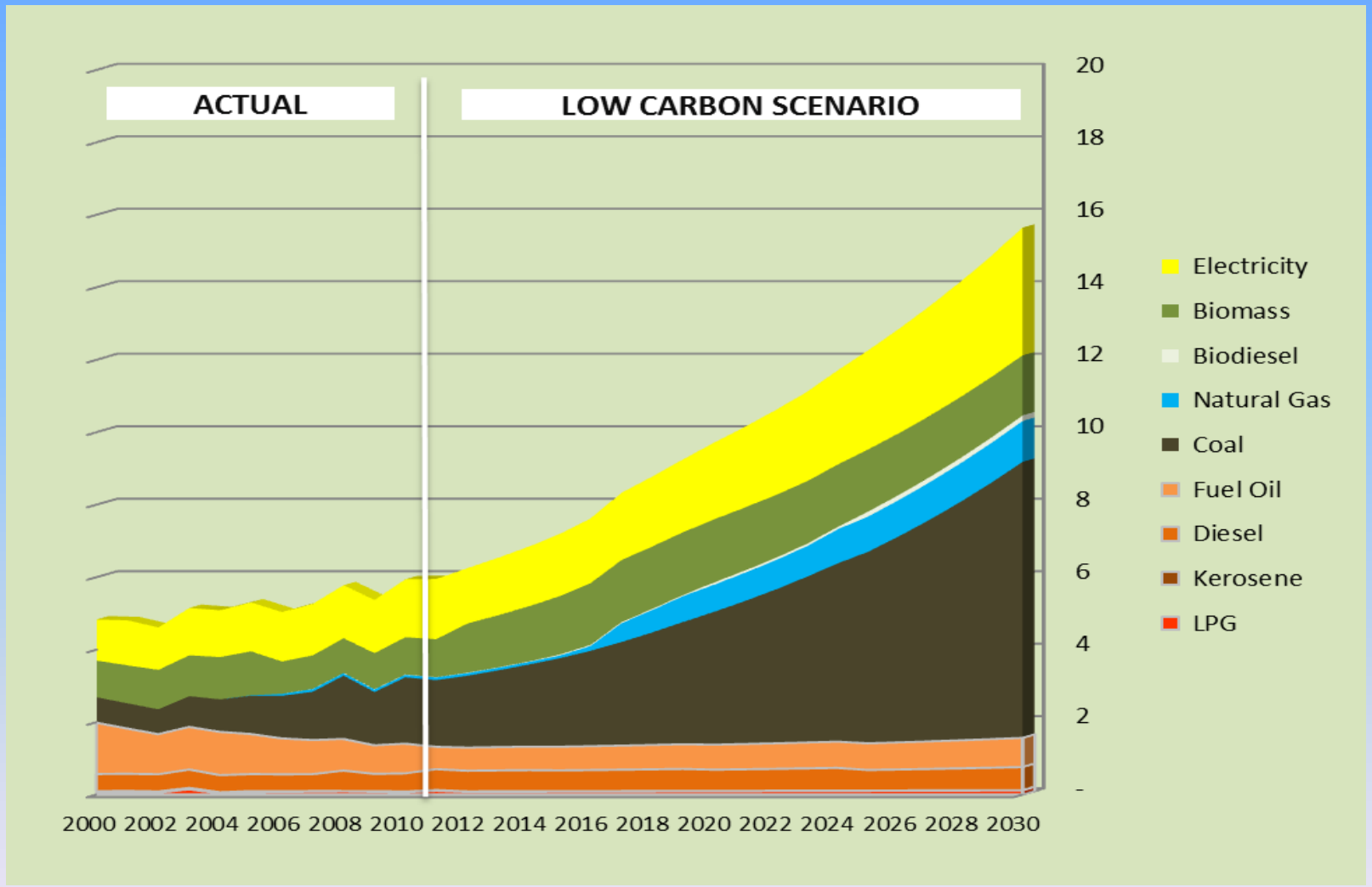
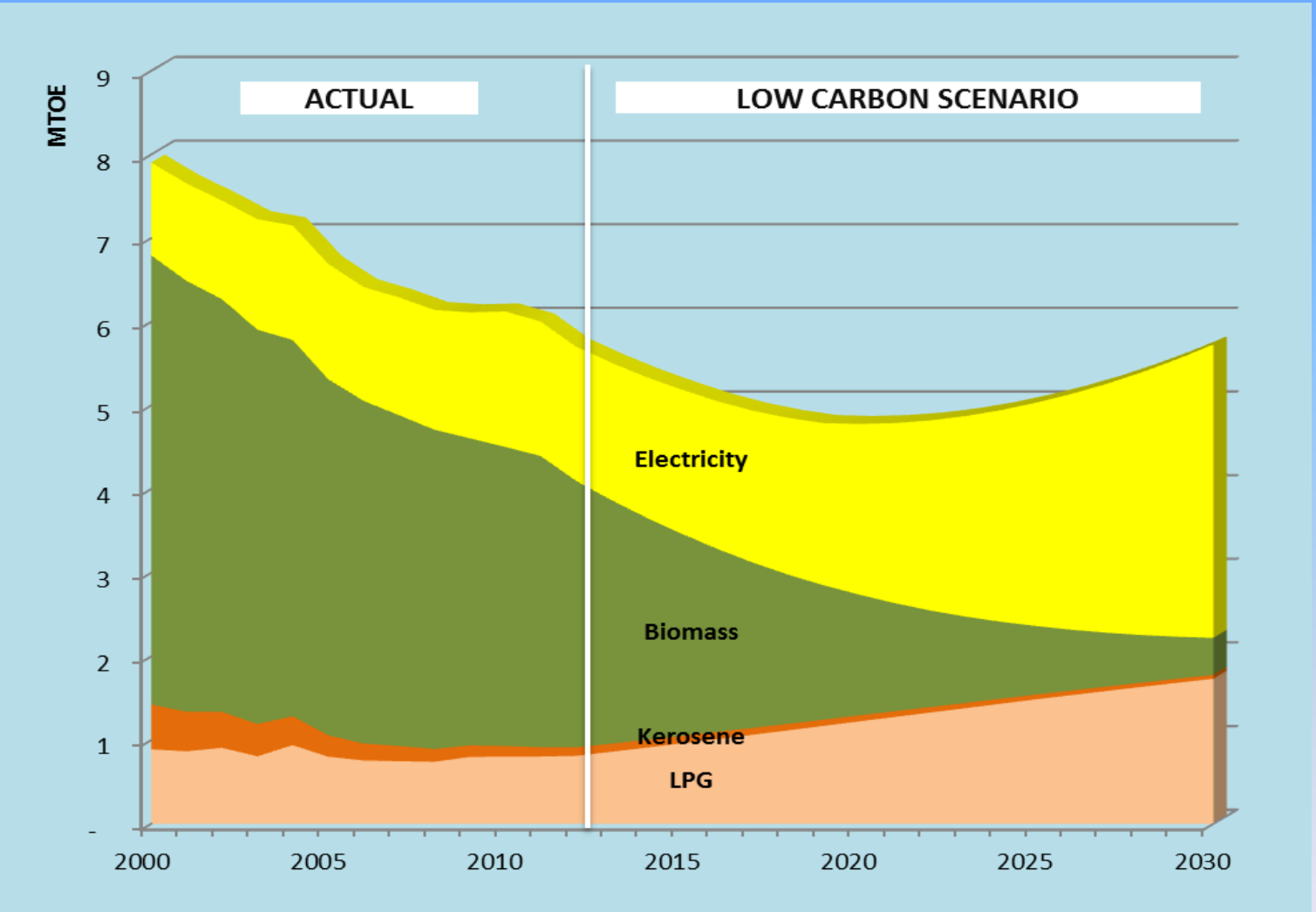
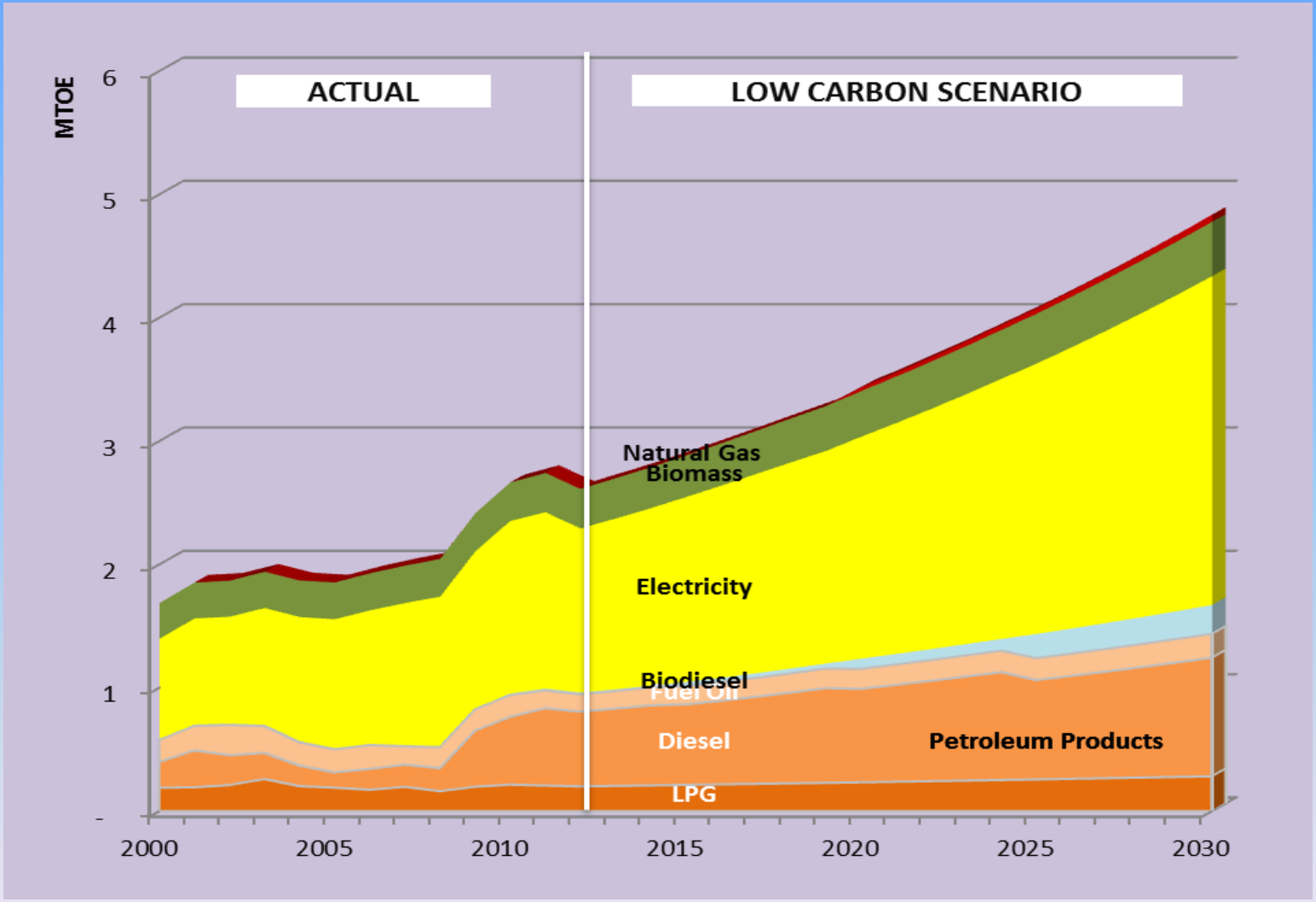
Industry Energy Demand, by Fuel



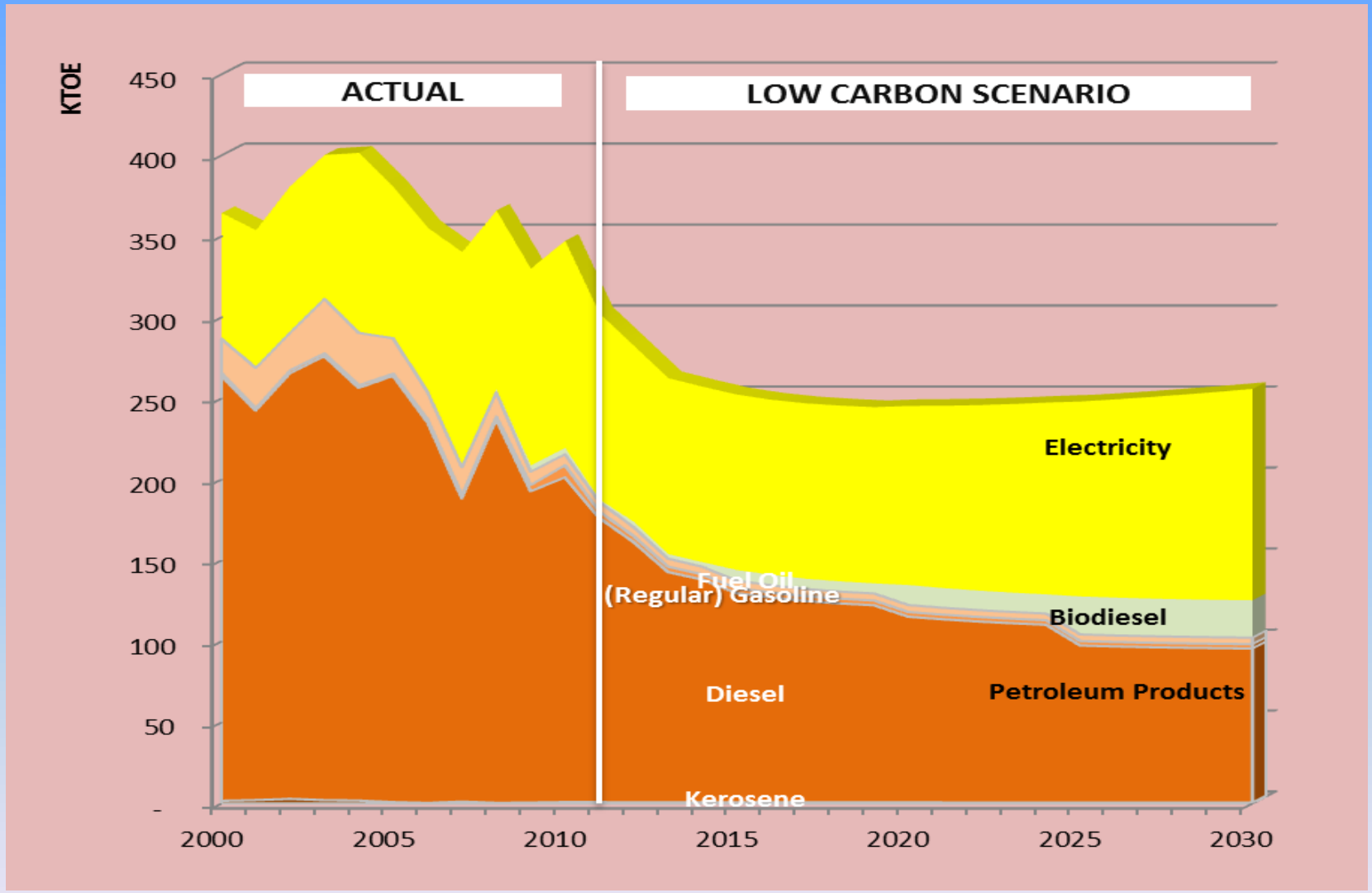
Residential Energy Demand, By Fuel



Commercial Energy Demand, By Fuel



AFF Energy Demand, by Fuel



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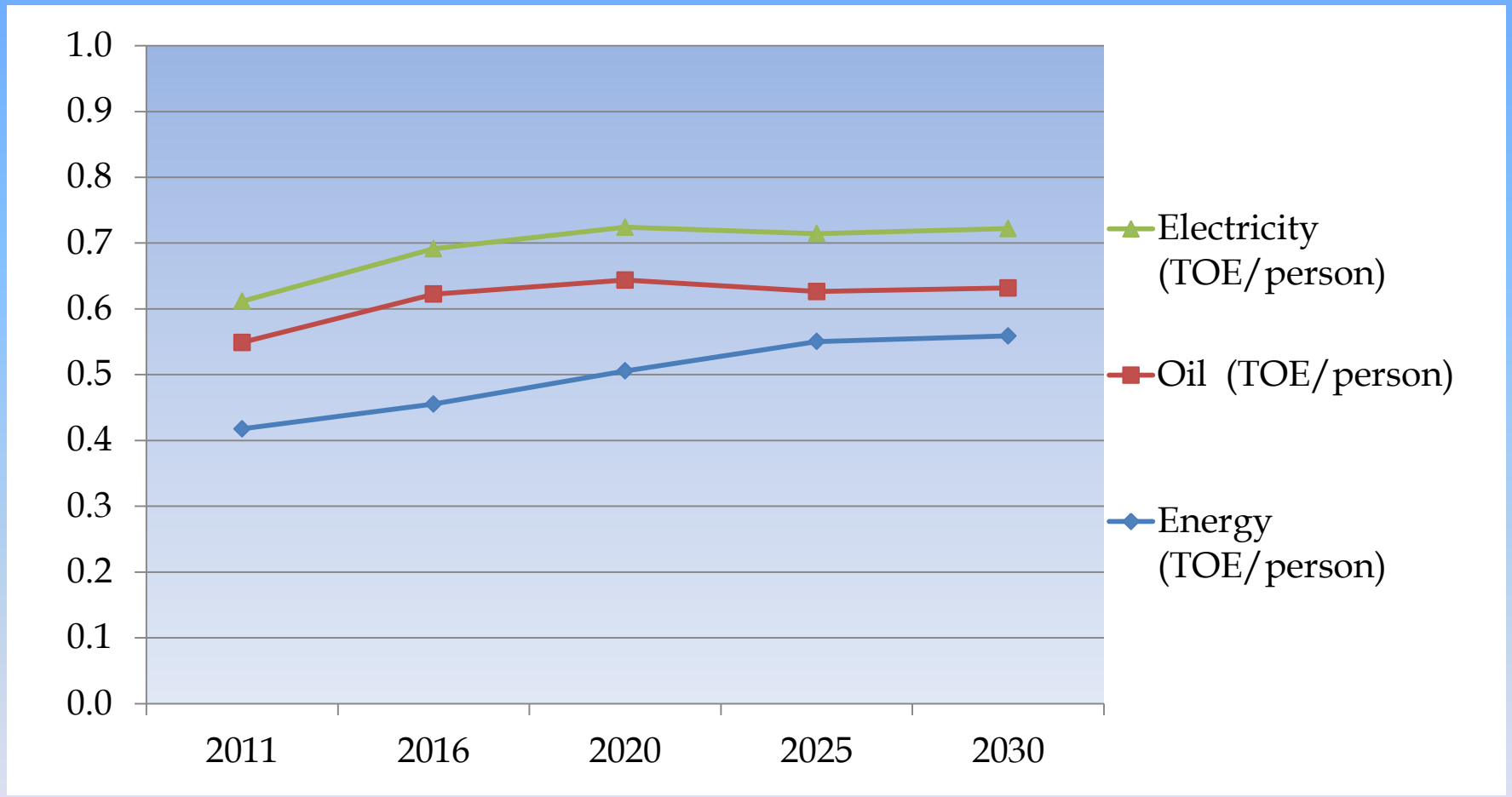
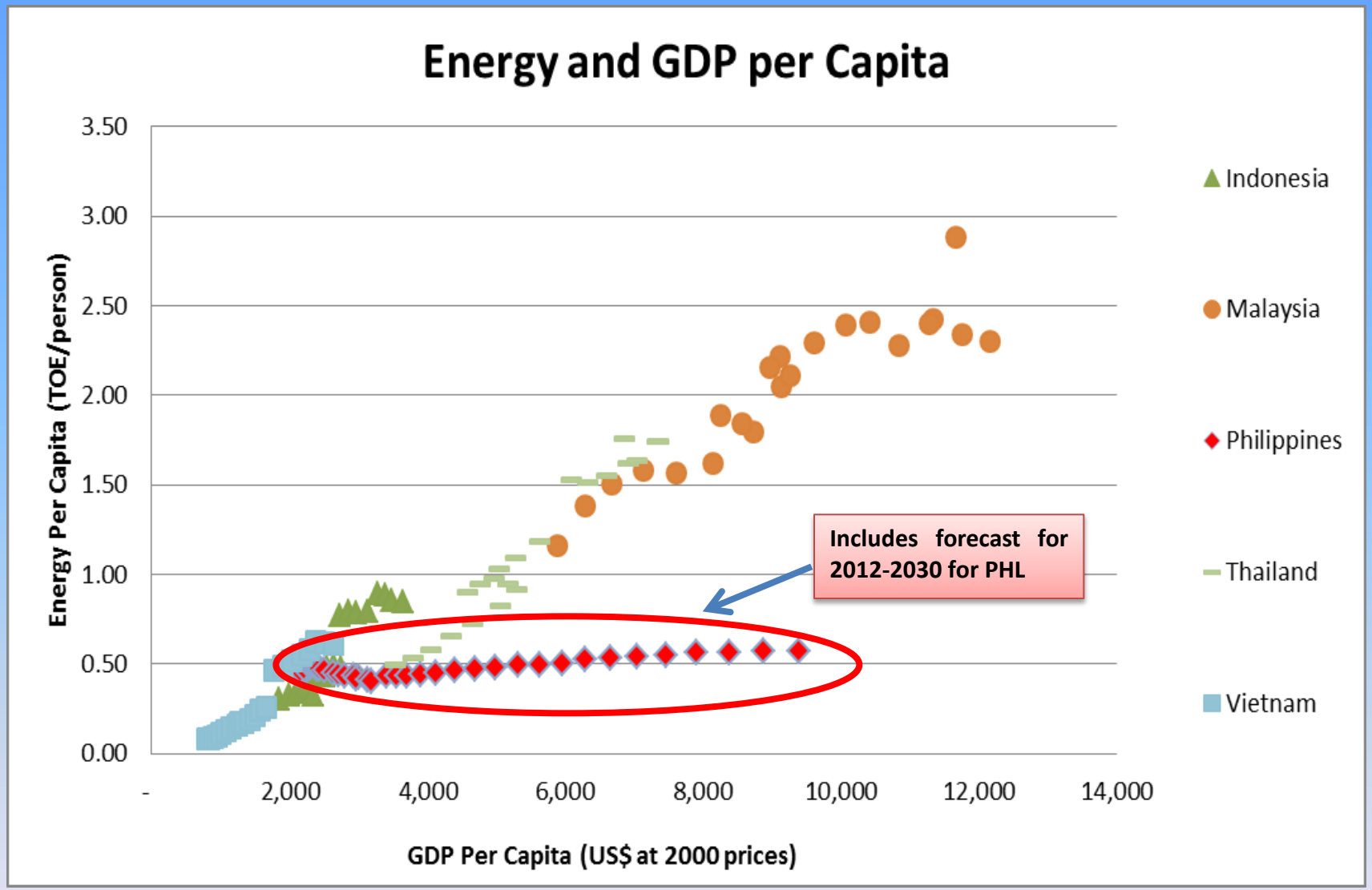
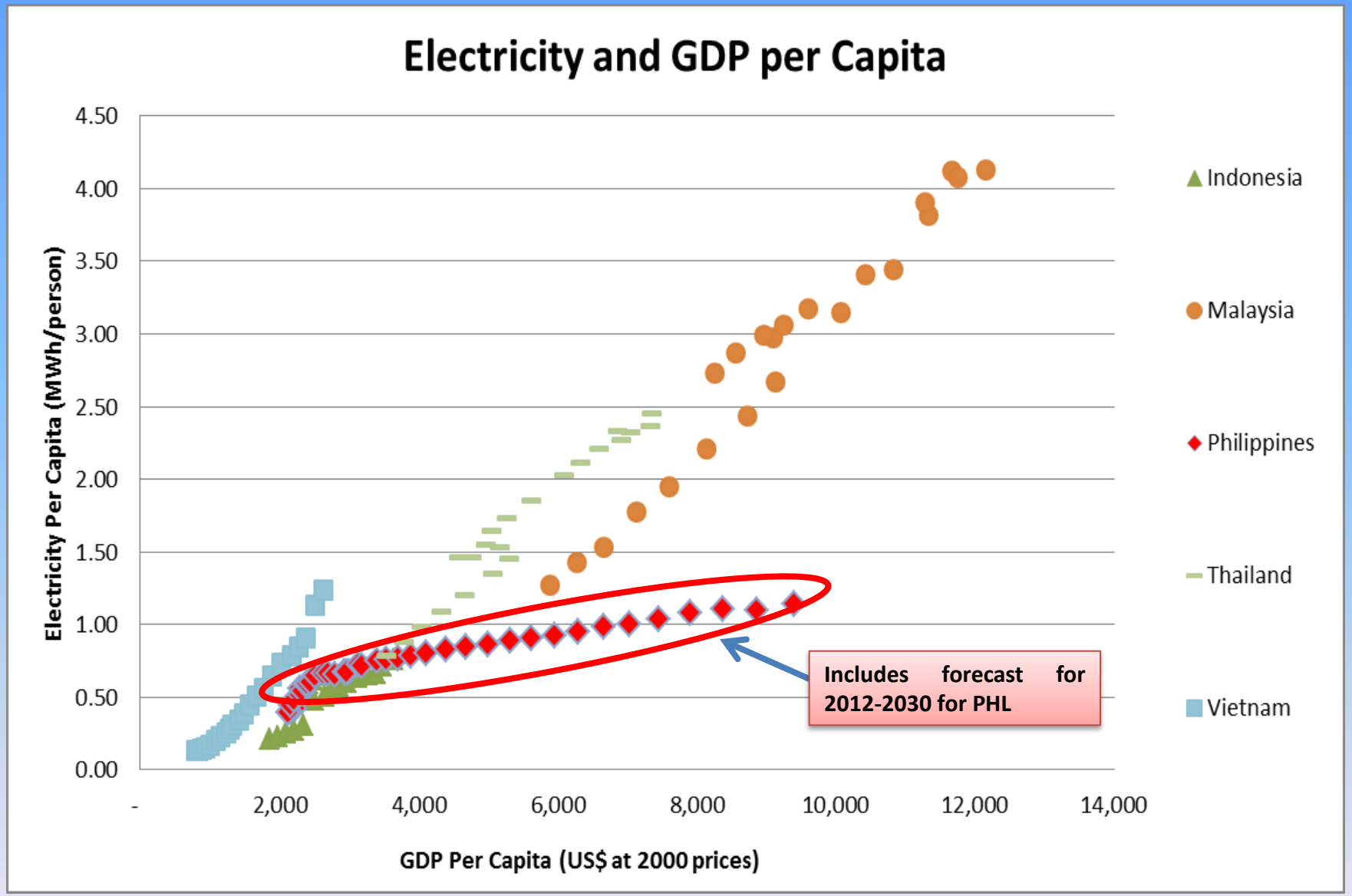
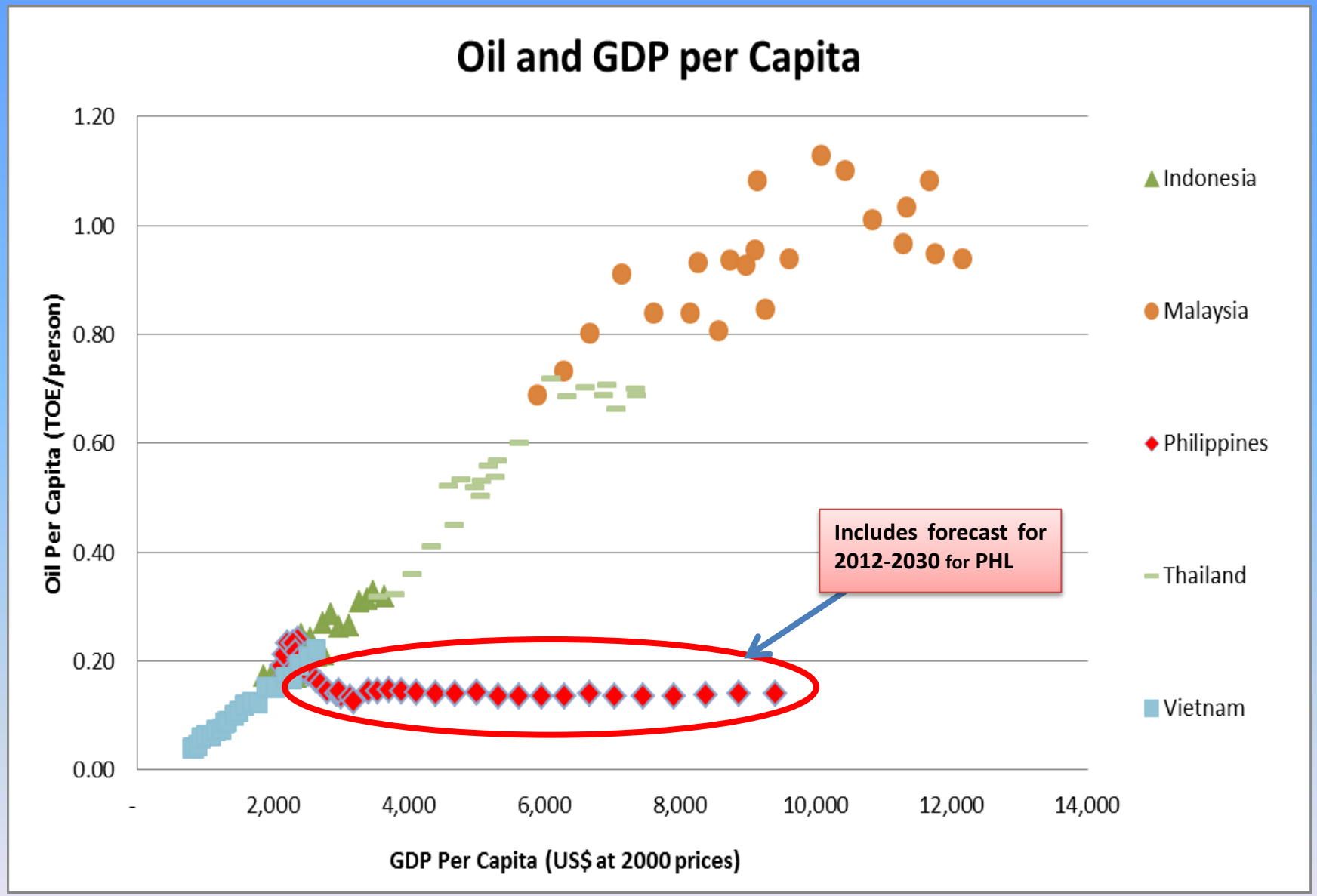
Energy Indicators (on a per capita basis)





*Other ASEAN only for 1990-2011


Electricity and GDP per Capita
Electricity Per Capita (MWh/person)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
-
2,000
4,000
6,000
8,000
10,000
12,000
14,000
GDP Per Capita (US$ at 2000 prices)
Indonesia
Malaysia
Philippines
Thailand
Vietnam
Includes forecast for 2012-2030 for PHL



*Other ASEAN only for 1990-2011

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POWER SECTOR
(Generation)




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Plans and Programs

Reforms in the Power Sector

- Retail Competition and Open Access (RCOA)
- Adapt Smart Grid Technologies
- Grid Interconnection
- Electricity Spot Market
- RE Market
- Accelerated Rural Electrification

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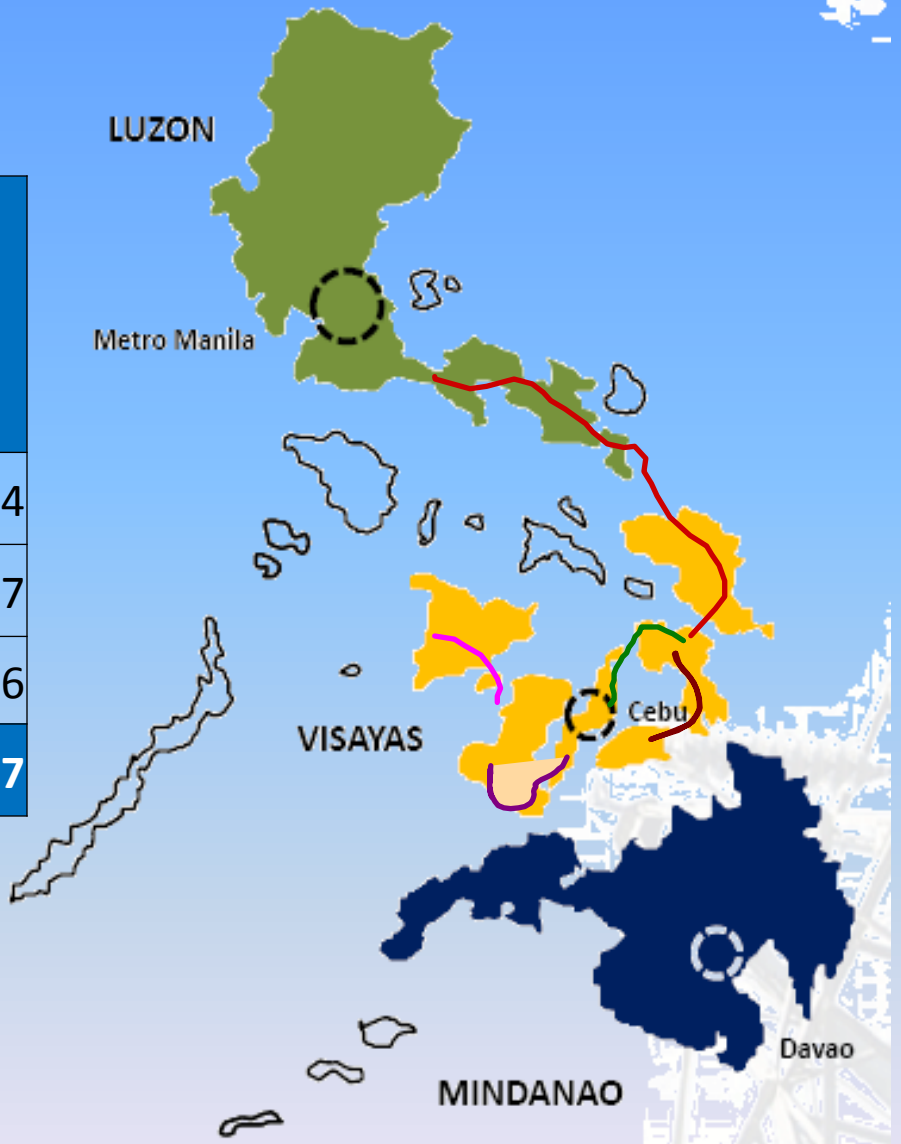
Power Sector Situation

Overview of the Power System

GRID	Installed Capacity	Dependable Capacity
LUZON	11,739	10,824
VISAYAS	2,402	2,037
MINDANAO	2,022	1,616
TOTAL	**16,162**	**14,477**

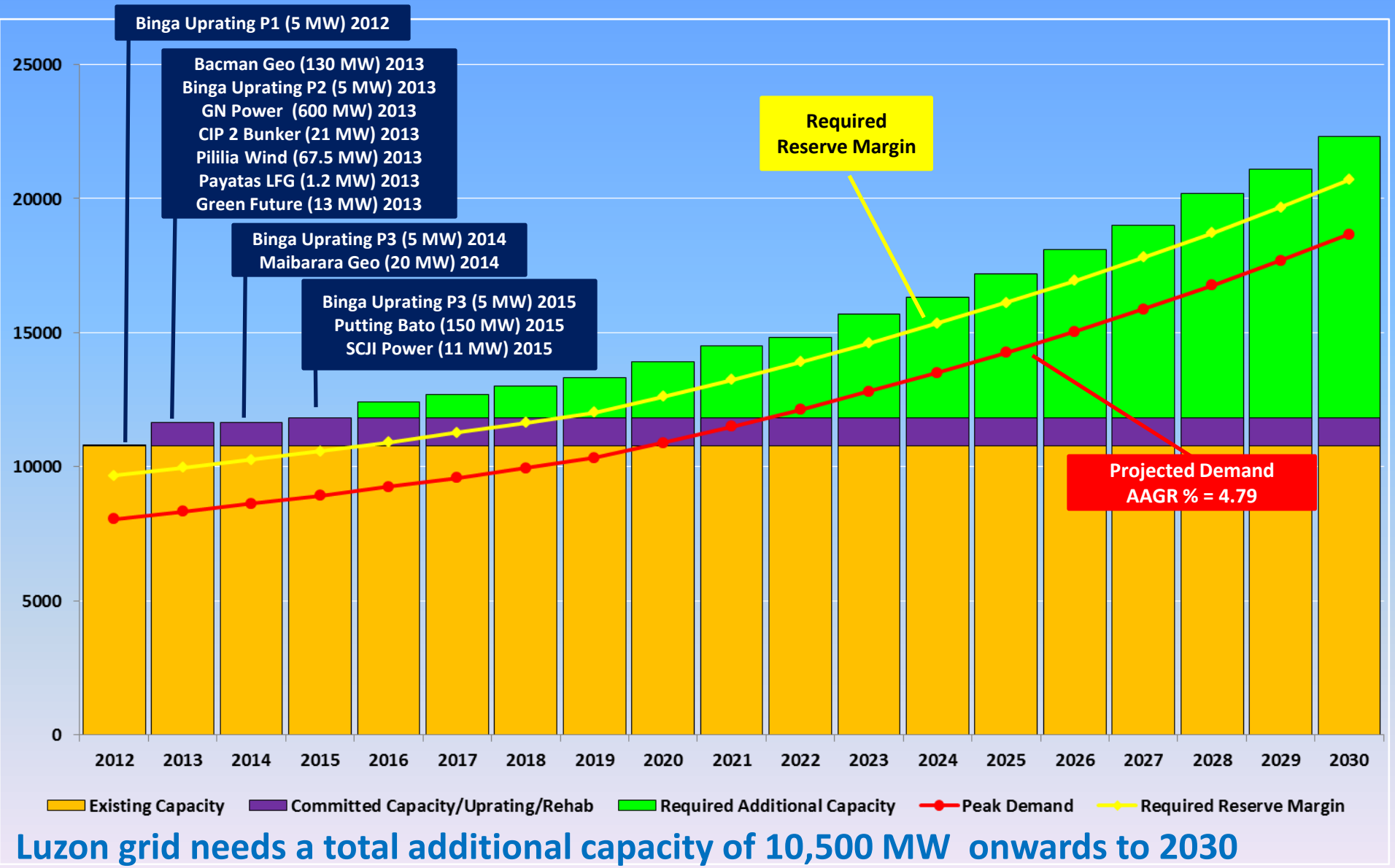
Interconnection Line Capacity

- **Leyte-Luzon (440 MW)**
- **Leyte-Cebu (400 MW)**
- **Cebu-Negros (200 MW)**
- **Negros – Panay (100 MW)**
- **Leyte-Bohol (100 MW)**



Note: Transparent islands in the above diagram are not covered by NGCP's network.

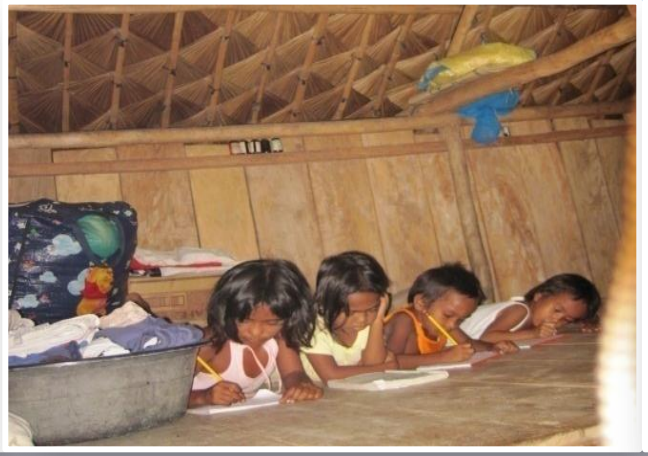
Power Supply and Demand Outlook



Luzon grid needs a total additional capacity of 10,500 MW onwards to 2030

A 600 MW new capacity is needed starting 2016 to meet the demand and required reserve

RURAL ELECTRIFICATION



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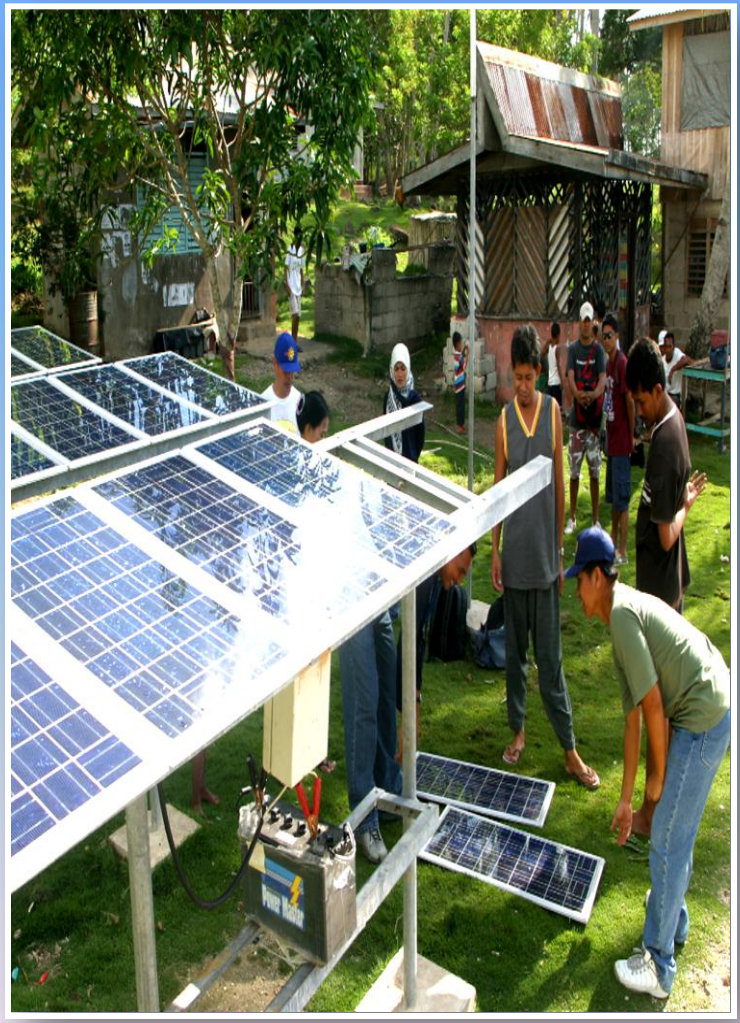
Plans and Programs

Rural Electrification



- Achieve *90.0 percent* household electrification by *2017* and *100 percent* sitio electrification by *2015*
- Formulate Household Electrification Development Plan
- Pursue development and implementation of innovative service delivery mechanisms to increase household connections

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Measurable Targets

Rural Electrification

YEAR	HOUSEHOLDS	SITIOS
2011	39,773	1,520
2012	142,110	4,487
2013	228,300	3,783
2014	612,100	12,114
2015	532,250	10,537
2016	5,400	
TOTAL	**1,559,833**	**32,441**

Note: Based on the targets of DOE's Household Electrification Program (HEP) using RE and NEA's Sitio Electrification Program (SEP)

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Measurable Targets
Rural Electrification

Luzon	Number of Sitios/Puroks
CAR	180
Region I	126
Region II	157
Region III	284
Region IV-A	211
Region IV-B	257
Region V	204
TOTAL	**1,419**

NEA's Sitio Electrification Program for 2012

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Indigenous Energy Development




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Plans and Programs

Indigenous Energy Development

- Continue the conduct of Contracting Rounds to offer prospective areas
- Promote use, development and localization of appropriate and clean technologies
  - coal liquefaction, coal gasification and CBM
- Develop a framework for pricing of local resources
- Continue international cooperation on energy resources e.g. establishment of ASEAN Coal Supply Security Agreement
- Encourage further investment on resource development
  - Establish one-stop shop for investors

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Measurable Targets

Coal

	2012	2015	2020	2025	2030
Production (@10,000 BTU/lb MMMT)	**8.33**	**11.12**	**12.59**	**13.03**	**13.31**
LUZON	**0.12**	**0.30**	**0.47**	**0.49**	**0.50**
II	*0.04*	*0.18*	*0.31*	*0.33*	*0.33*
IV	*0.01*	*0.03*	*0.05*	*0.05*	*0.05*
V	*0.07*	*0.10*	*0.11*	*0.12*	*0.13*
VISAYAS	**7.48**	**8.85**	**9.13**	**9.27**	**9.28**
VI	*7.22*	*8.14*	*0.98*	*8.16*	*8.16*
VII	*0.26*	*0.71*	*0.00*	*1.11*	*1.11*
MINDANAO	**0.73**	**1.96**	**3.00**	**3.27**	**3.53**
IX	*0.43*	*0.74*	*0.96*	*1.08*	*1.08*
X	-	*0.02*	*0.02*	*0.02*	*0.02*
XII	*0.13*	*0.68*	*1.28*	*1.41*	*1.62*
CARAGA	*0.17*	*0.53*	*0.75*	*0.76*	*0.82*
Fuel Oil Displacement (KTOE)	**4.40**	**5.87**	**5.62**	**6.29**	**6.38**

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Measurable Targets

Oil and Gas

FIELD	2012-2015	2016-2020	2021-2025	2026-2030
Awarding of Service Contracts	10	23	19	14
Acquisition of 2D Data (line-kms.)	7,000	9,500	7,000	9,000
Acquisition of 3D Data (line-kms.)	800	950	700	1,150
Exploration Well Drilling	20	25	25	25
Production				
Oil (MMB) Gas (BCF) Condensate (MMB)	27.73 585.29 20.99	19.53 747.87 25.61	14.77 1,190.85 21.44	15.94 751.73 2.75

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RENEWABLE ENERGY





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Plans and Programs

Renewable Energy

- Promote the National Renewable Energy Program (NREP)
  - ➢ Triple installed capacity by 2030
- Implement the RE law policy mechanisms
- Continuous assessment of RE resources
- Evaluate new and emerging technologies
- Develop / Tap local capacity and expertise

Measurable Targets

Renewable Energy

Target Capacity Addition (in MW)

Sector	Committed			Indicative			TOTAL		
	Luzon	Visayas	Mindanao	Luzon	Visayas	Mindanao	Luzon	Visayas	Mindanao
Geothermal	20	20	50	120	80	-	140	100	50
Hydropower	-	8	8	150	-	257	150	8	265
Biomass	13	4	-	43	112	35	56	116	35
Wind	68	-	-	466	54	5	534	54	5
Solar	-	-	-	-	-	35	-	-	35
Ocean	-	-	-	-	-	-	-	-	-
TOTAL	**101**	**32**	**58**	**779**	**246**	**332**	**880**	**278**	**390**
PHILIPPINES	**191 MW**			**1,357 MW**			**1,548 MW**		

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Measurable Targets

Renewable Energy

2011-2030 Potential RE Resource (in MW) - Philippines

Sector	2012-2015	2016-2020	2021-2030	TOTAL
Geothermal	50	940	175	1,165
Hydropower	310	3,125	1,892	5,326
Biomass	81	-	-	81
Wind	678	865	432	1,975
Solar	269	5	10	284
Ocean	-	36	35	71
TOTAL	**1,388**	**4,970**	**2,544**	**8,902**

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Measurable Targets

Renewable Energy

2011-2030 Potential RE Resource (in MW) - Luzon

Sector	2012-2015	2016-2020	2021-2030	TOTAL
Geothermal	-	680	-	680
Hydropower	172	2,170	1,510	3,852
Biomass	45	-	-	45
Wind	515	840	432	1,787
Solar	230	-	-	230
Ocean	-	36	-	36
TOTAL	**963**	**3,725**	**1,942**	**6,630**

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DOWNSTREAM OIL INDUSTRY




Plans and Programs

Downstream Oil Industry

- Promote development and upgrade of downstream infrastructure
  - oil refineries, regional depots and distribution stations
- Update Oil Supply Contingency Plan
  - emergency preparedness mechanisms
  - develop/establish Oil Stockpile
- Mitigate impacts of high oil price
  - promote fuel discounts and direct subsidies to public utility jeepney and tricycle drivers

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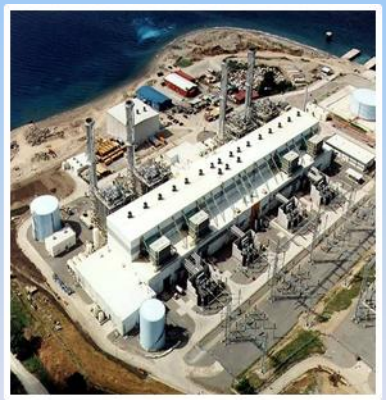
DOWNSTREAM NATURAL GAS





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Plans and Programs

Downstream Natural Gas

- Develop strategic infrastructure for receiving, storage, transmission and distribution
- Promote use of natural gas beyond power
- Serve as major alternative fuel for transport especially public transport

BATMAN 2
(Bataan - Manila)
140 kms. (2020)

ET LOOP
(EDSA – Taft Loop)
40 kms. (2020)

SU-MA
(Sucat - Malaya)
35 kms. (2017)

BATCAVE
(Batangas – Cavite)
40 kms (2022)

BATMAN 1
(Batangas Manila)
80-100 kms. (2015-17)

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Plans and Programs

Natural Gas

Luzon Critical Infrastructure Projects

Pipeline Projects	Target Year
105 k.m. Batangas-Manila *(BatMan 1)* Pipeline	2015-2017
15-k.m. Sucat-Fort Bonifacio Pipeline	2017
35-k.m. Sucat-Malaya *(Su-Ma)* Pipeline	2017
38-k.m. Sucat-Quirino Pipeline	2020
140-k.m. Bataan-Manila *(BatMan2)* Pipeline	2020
40-k.m. Metro Manila/EDSA-Taft Gas Pipeline – ET Loop	2020
40-k.m. Subic Pipeline *(from proposed BatMan2 to Subic)*	2021
25-k.m. Clark Pipeline *(from proposed BatMan2 to Clark)*	2022
40-k.m. Bataan-Cavite *(BatCave)* Pipeline	2022

Plans and Programs

Natural Gas

Luzon Critical Infrastructure Projects

Refilling Stations	Target Year
CNG Refilling Stations in Metro	2013-2015

Liquefied Natural Gas (LNG) Terminals	Target Year
LNG Hub Terminal in Pagbilao, Quezon	2013-2014
LNG Terminal in Batangas	2021-2030
LNG Terminal in Bataan	2025

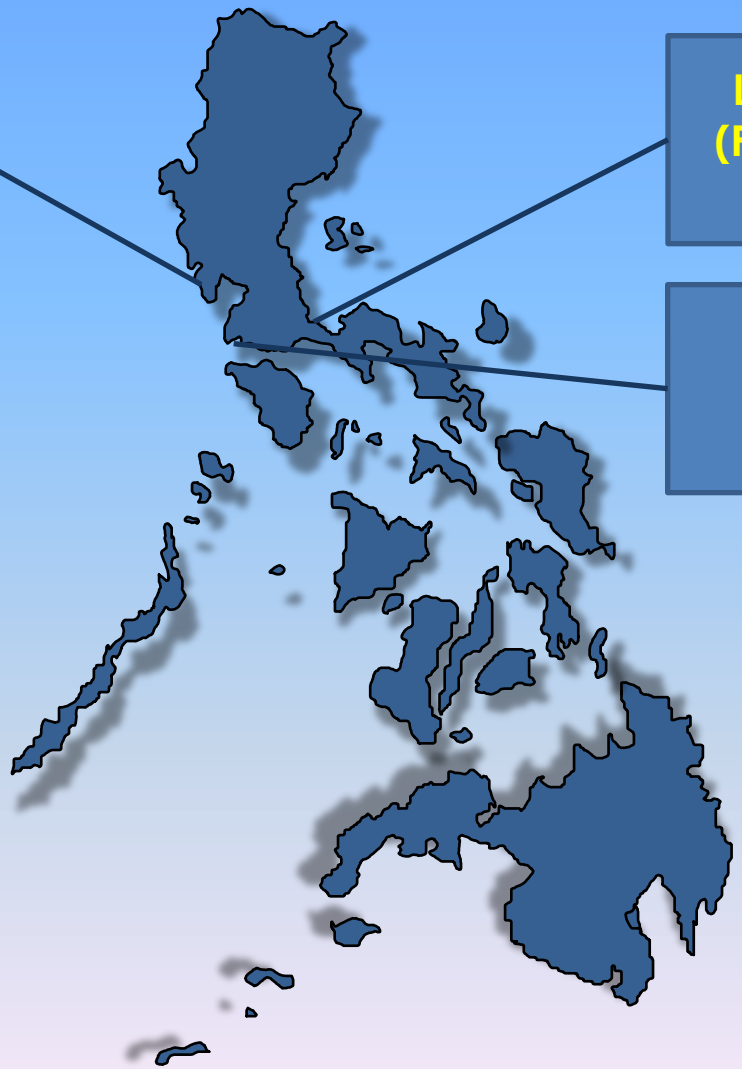
Plans and Programs

Natural Gas

LNG Terminal (Bataan) 2025

LNG Hub Terminal (Pagbilao, Quezon) 2013-2014

LNG Terminal (Batangas) 2021-2030



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ALTERNATIVE FUELS

Plans and Programs

Alternative Fuels for Transport

- Create market awareness and collaboration with industry stakeholders
- Establish funding mechanisms to develop market
- Strengthen partnership with the academe and research institutions
  - conduct of on-road performance and durability tests for higher biofuels blend
  - establish the Natural Gas Institute
  - build manpower capability

30 by 2030

- 30 percent of all public utility vehicles running on alternative fuels nationwide by 2030

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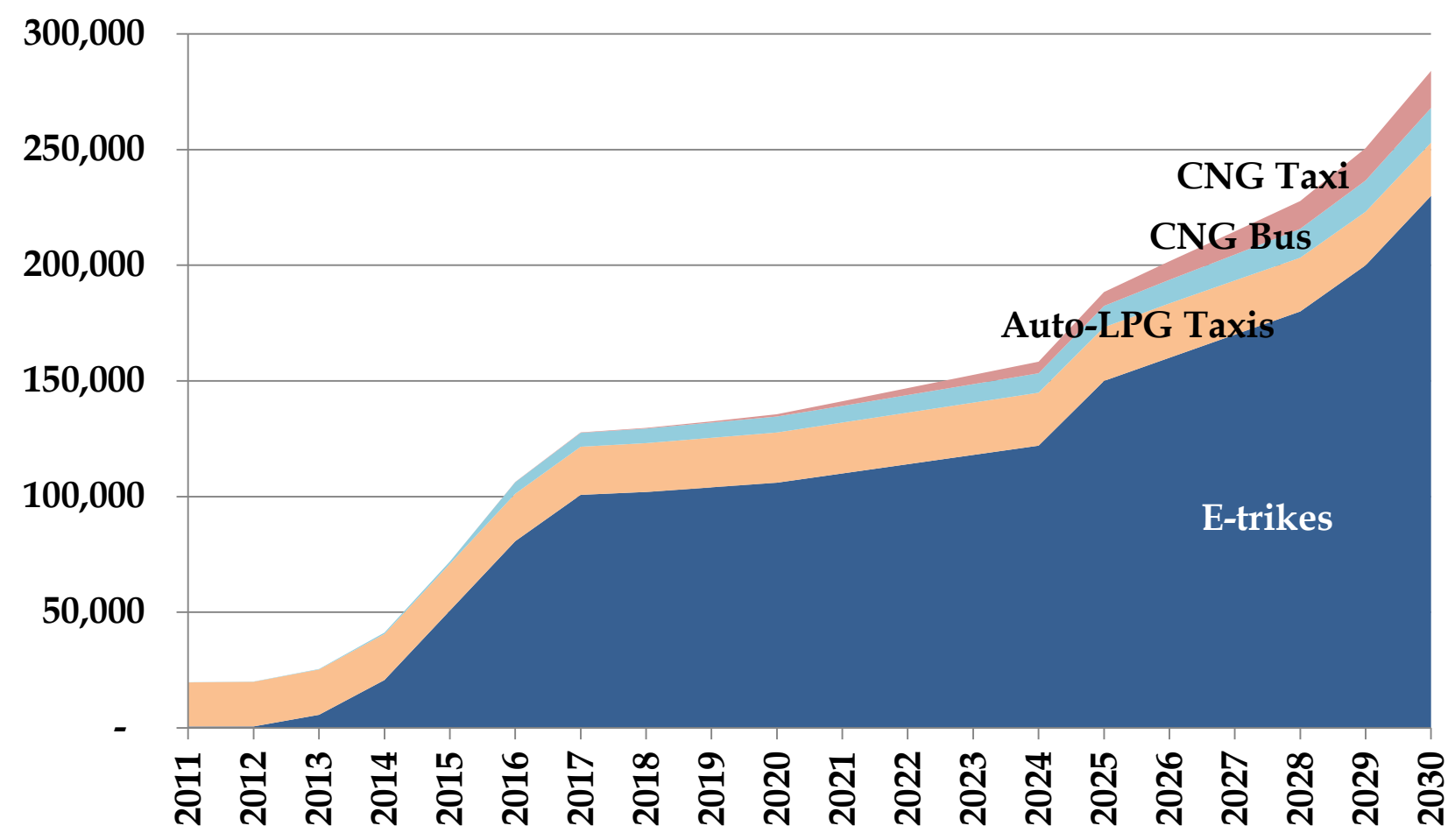
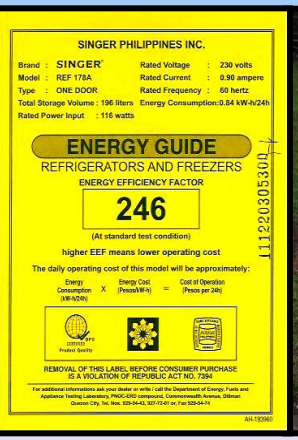
Target Number of Vehicles on Alternative Fuels

Type	2011	2015	2016	2020	2025	2030
Number of Vehicles						
CNG						
Bus	61	1,000	5,000	6,900	9,200	15,000
Taxi			100	1,000	6,000	16,000
Auto-LPG	19,052	20,200	20,500	21,700	23,200	23,000
E-trikes	630	50,170	80,730	106,000	150,000	230,000
Biofuel Blending						
Ethanol	10%	10%	10%	20%	20%	20%
CME	2%	5%	5%	10%	20%	20%

Alternative Vehicles for Transport



ENERGY EFFICIENCY & CONSERVATION





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Plans and Programs

Energy Efficiency as a Way of Life

- Advocate passage of Energy Efficiency and Conservation Bill
- Promote private Energy Service Companies *(ESCO)* as a new business market industry model
- Continue implementation of the National Energy Efficiency and Conservation Program *(NEECP)*:
  - ✓ Information Education and Communication *(IEC)* Campaign
  - ✓ Government Energy Management Program *(GEMP)*
  - ✓ Demand Side Management Program *(DSM)*
  - ✓ Expand coverage of energy labeling and standardization

BRIGHT NOW! DO RIGHT. BE BRIGHT.

Measurable Targets

Energy Efficiency as a Way of Life

Sectoral Target : 10% energy savings on the total annual energy demand of all economic sectors

Cumulative Target Energy Savings by Sector (KTOE)

Sector	2012	2015	2020	2025	2030
Agriculture	16	17	20	25	30
Industrial	157	197	283	408	583
Commercial	127	164	241	345	482
Residential	140	179	265	401	588
Transport	408	516	689	894	1,169
TOTAL	**848**	**1,073**	**1,499**	**2,072**	**2,850**
MW Deferred Capacity	**384**	**486**	**679**	**938**	**1,291**
CO_2 Equivalent, tons CO_2	**1,413,303**	**1,786,955**	**2,496,928**	**3,451,188**	**4,747,802**

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Thank You

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